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An analytical decision maker method for routine controls of the incoming defective smoky cocoa beans.

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Text

Cocoa smoky off-flavour generates from unappropriated or not well controlled artificial drying applied on beans to speeding up the post-harvest process in order to struggle the effect of unfavourable climate from the small farmers producing cocoa. Smoky off-flavour cannot be removed cannot be removed during chocolate manufacture and it can heavily affects the quality of the finished chocolate products[1]. The taste test to define the chocolate quality is not made directly on the beans but on the liquor and requires long time in terms of panel training and alignment, it often cannot be implemented at-line for an immediate feedback and a critical objective evaluation. At the same time, there isn't a reference objective method to detect this off flavour on incoming raw material. The aim of this work is to use diagnostic mass spectral fingerprints by HS-SPME-electronic nose based on MS coupled with chemometrics in developing an instrumental prediction model to detect smoky defective beans that can be exploited as an analytical decision maker for routine controls[2-3]. Fifty bean samples from different year of harvest and origins were analysed and sensory evaluated from an internal panel. A supervised PLS-DA model classification built on a cross-validated (5 CV) training set (n=35) and applied on an external test set (n=12) of samples display an ability of correct classification of 100%. Results show that the HS-SPME-eMS fingerprints-chemometrics is a promising approach to be used as a TAS (Total Analysis System)[4] for a high throughput solution to discard defective cocoa beans.

References

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